HONOLULU
LA JOLLA
MONTEREY
TIBURON

SOUTHWEST FISHERIES CENTER

MONTHLY REPORT - JANUARY 1980

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SOUTHWEST FISHERIES CENTER

LA JOLLA, CALIFORNIA

HONOLULU LABORATORY
LA JOLLA LABORATORY
TIBURON LABORATORY
PACIFIC ENVIRONMENTAL GROUP

MONTHLY REPORT - JANUARY 1980

STATUS OF PUBLICATIONS

Published

Brill, Richard W. 1979. The effect of body size on the standard metabolic rate of skipjack tuna, Katsuwonus pelamis. Fish. Bull., U.S. 77:494-498.

Dizon, Andrew E. and Richard W. Brill. 1979. Thermoregulation in yellowfin tuna, Thunnus albacares. Physiol. Zool. 52:581-593.

To determine their capacity for thermoregulation, yellowfin tuna, Thunnus albacares, were subjected to a series of 12-h periods at T_a's of 20, 25, and 30 C. Muscle temperature, measured with an ultrasonic transmitter attached to the fish, and swim speed were simultaneously monitored. No relationship was found between speed and muscle temperature, although metabolic heat production is inexorably linked to the former. Because both direct and inverse muscle temperature/heat production relationships were observed, and because physical (as opposed to physiological) explanations for our data can be discounted, we hypothesize yellowfin tuna are capable of some type of central nervous system (CNS)-mediated physiological thermoregulation.

Approved by Center Director

Ahlstrom, Elbert H. and H. Geoffrey Moser. Characters useful in identification of pelagic marine fish eggs. For publication in California Cooperative Oceanic Fisheries Investigations Reports.

THIS REPORT DOES NOT CONSTITUTE PUBLICATION AND IS FOR INFORMATION ONLY

Gooding, Reginald M., William H. Neill, and Andrew E. Dizon. Respiration rates and low-oxygen tolerance limits in skipjack tuna, Katsuwonus pelamis.

Hunter, J. Roe and Beverly J. Macewicz. Sexual maturity, batch fecundity, spawning frequency and temporal pattern of spawning for the northern anchovy, Engraulis mordax, during the 1979 spawning season. For publication in California Cooperative Oceanic Fisheries Investigations Reports.

Huppert, Daniel D. California's management programs for the herring roe abalone fisheries. In Proceedings from the Seminar on Economic Aspects of Limited Entry and Associated Fisheries Management Measures.

Lasker, Reuben and John C. Brown. For publication in California Cooperative Oceanic Fisheries Investigations Reports.

Squire, James L. Jr. A review of pelagic resource abundance levels off California, 1963-1978, as measured by an airborne fish monitoring program. For publication in NOAA Technical Report Series.

Whipple, J.A., M.B. Eldridge and P. Benville, Jr. An ecological perspective of the effects of monocyclic aromatic hydrocarbons on fishes. Proc. Symposium on Pollution and Physiology of Marine Organisms, Nov. 6-9, 1979. Northeast Fisheries, Milford, Conn.

Translations

The following four Russian articles on iterative aggregation were translated by Wilvan G. Van Campen for the Honolulu Laboratory. Copies of these translations are available on a limited basis.

Rabinovich, I.N. 1976. The convergence of the algorithm of iterative aggregation in a model of optimal inter-product balance. Optimization Methods and Operations Research (Metody Optimizatsii i Issledovanie Operatsii. Akademiia Nauk SSSR. Sibirskoe Otdelenie. Energetcheskii Institut) p. 56-63. (SWFC Transl. No. 40, 9 p.)

Vakhutinskii, I. Ya. and L.M. Dudkin. 1973. Algorithm of iterative aggregation for the solution of the problem of linear programming of a general nature. Izvestiia of the Siberian Section of the Academy of Sciences of the USSR Social Science Series (Akademiia Nauk SSSR. Sibirskoe Otdelenie. Izvestiia. Novosibirsk. Seriia Obshchestvendykh Nauk) vol. 3, No. 11, p. 67-71. (SWFC Transl. No. 41, 8 p.)

Vakhutinskii, I. Ya., L.M. Dudkin, and B.A. Schchennikov. 1973. Iterative aggregation in some optimal economic models. Economics and Mathematical Methods (Ekonomika i Matematicheskii Metody) vol. 9, No. 3, p. 420-434. (SWFC Transl. No. 42, 24 p.)

Agafanov, G.V. and A.S. Makarova. 1976. An algorithm for iterative aggregation of economic hierarchy systems as an instrument for consistency of solutions of multilevel systems. Optimization Methods and Operations Research (Metody Optimizatsii i Issledovanie Operatsii. Academiaa Nauk SSSR. Sibirskoe Otdelenie. Energeti-Cheskii Institut) p. 132-148. (SWFC Transl. No. 43, 18 p.)

Administrative Reports

Honolulu Laboratory

Living Marine Resources, Inc. 1979. Alternative fishery statistical information systems for central and western Pacific regions within management purview of the United States Western Pacific Regional Fishery Management Council. SWFC Admin. Rep. H-79-25C.

La Jolla Laboratory

Jackson, T. Trip Report: Porpoise population aerial survey of the eastern tropical Pacific Ocean - January 22-April 25, 1979. SWFC Admin. Rep. No. LJ-80-01.

HONOLULU LABORATORY

RESOURCE ASSESSMENT AND DEVELOPMENT INVESTIGATIONS (RADI)

Spawning Studies of Fish Species in the Hawaiian Archipelago Continue

Richard N. Uchida, Leader, Insular Resources Task at the Honolulu Laboratory, reported that researchers in the Task continued studies in the spawning habits of various fish species occurring on the Hawaiian Archipelago. Research Assistants Bert S. Kikkawa and Linda Hubbell examined ovaries of pink snapper, Pristipomoides filamentosus and amberjack, Seriola dumerilii. Research Assistant James Prescott examined ovaries of red snapper, Etelis carbunculus, Brigham's snapper, Pristipomoides zonatus, pig ulua, Caranx cheilio, and wahoo, Acanthocybium solandri. Prescott found that most of the ovaries he examined were immature.

Kikkawa and Hubbell estimated that female amberjack approach sexual maturity at about 50 cm in fork length. A ripe female, in which spawning appeared to be imminent, possessed ovaries that were considerably enlarged and which accounted for 4.25% of the total body weight. In a female with ova in the developing stage, the ovaries accounted for only 1.75% of the body weight. Kikkawa and Hubbell also examined ovaries from 28 amberjack that had been rejected for marketing because of unsafe levels of ciguatoxin in their flesh. Although ciguatoxin concentrations are higher in the ovaries and other organs, there was no relation between the developmental stage of the ovaries and toxicity levels of the fish.

Consultant Completes Work at Honolulu Laboratory

Dr. John Munro, Dean of Faculty of Science, University of Papua New Guinea, completed his consultancy which was arranged through a contractual arrangement with the Honolulu Laboratory. Munro examined commercial and research cruise data collected during fishing operations for spiny losters and bottom fish in the Northwestern Hawaiian Islands (NWHI) and discussed problems in collecting and analyzing the data with several staff members. He also provided the laboratory with an assessment of the field program.

Otolith Growth Increments Studied

James H. Uchiyama, Fishery Biologist, continued his study to determine whether the growth increments on otoliths of the pink snapper, P. filamentosus, are laid down daily. Food impregnated with oxygtetracycline were presented to a pink snapper in an aquarium. However, the fish refused to feed on the treated food and Uchiyama was forced to inject 40 mg of oxytetracycline into the peritoneum of the fish; unfortunately, the fish died a week later. Other species being used in these experiments are Caranx sp. and bigeye scad, Trachurops crumenophthalmus.

Review Papers and Background Documents Being Prepared for Northwestern Hawaiian Islands Symposium

Researchers in the Insular Resources Task are preparing several reports for the forthcoming symposium on the Northwestern Hawaiian Islands (NWHI) which will be held at the University of Hawaii in April. Research Assistant Robert L. Humphreys began collecting data, including interview information from fishermen and fish dealers, which will be used in a background document dealing with the bottom fish fishery and marketing infrastructure in Hawaii.

Uchiyama and Research Assistant Robert B. Moffitt began analysis of NWHI trolling data and Reginald M. Gooding, Fishery Biologist, started work on a review paper on the NWHI seamount resource surveys conducted by the NOAA vessel Townsend Cromwell.

Townsend Cromwell Cruise Instructions Readied

Fishery Biologist R. Uchida reported that final cruise instructions for Townsend Cromwell cruise, TC 80-02, were completed and preliminary cruise instructions for TC 80-03, Parts I and II, were being reviewed and readied for submission to the Pacific Marine Center. Because some of the emphasis in field work of the Honolulu Laboratory will be shifted in the coming year to research on the Hawaiian monk seal, Monachus schauinslandi, Uchida began rescheduling the field work to be conducted during TC 80-02 and TC 80-03 by the staff of Insular Resources Task and by the cooperating agencies, U.S. Fish and Wildlife Service and the Hawaii Division of Fish and Game.

Ciguatera Sampling Continues

Research Assistant Bernard M. Ito sampled the flesh from 138 kahala, Seriola dumerilii, landed at the United Fishing Agency during the period December 6, 1979 to January 14, 1980, in a continuing program to monitor the incidence of ciguatoxic fish. The fish sampled were caught off Penguin Bank, along the Waianae Coast, off the Kona coast (Kona Village), French Frigate Shoals, Necker Island, outside Kaneohe Bay, around Kauai and Kaula Islands. The fish ranged in weight from 0.79 to 22.79 kg. Eleven (8%) of the fish, ranging from 8.16 to 18.37 kg, were rejected because of borderline and positive levels of ciguatoxin (Table 1).

Table 1.--Results of ciguatoxin tests, December 6, 1979 to January 14, 1980.

Tissue tested[1]	Number	Negative		Borderline		Positive	
		Number	Percent	Number	Percent	Number	Percent
A	138	136	98	1	<1	1	<1
B	138	137	99	1	1	0	0
E	138	130	94	8	6	0	0

[1]All from the left side of the fish. A = anterior dorsal muscle tissue, B = abdominal muscle tissue, and E = posterior ventral muscle tissue.

Honolulu Laboratory Operations Research Analyst on Temporary Duty in Santa Cruz

Dr. Roy Mendelssohn, Operations Research Analyst in the Fishery Management Research Task, left Honolulu in early January for a 1-year stay at the University of California at Santa Cruz (UCSC), an action made possible under the provisions of the Inter-governmental Personnel Act of 1970. Most of Mendelssohn's time at the Center for Coastal Marine Studies, UCSC, will be devoted to writing a book, "Estimation, prediction, and management of random renewable resources." The proposed book will include results of his research during the last 3 years on methods to model and manage randomly varying renewable resources. Included in the book will be methods to examine multiple, conflicting objectives, and techniques to handle large-scale problems, such as multispecies models.

Mendelssohn will also do some teaching, work cooperatively on several ongoing research activities at the Center for Coastal Marine Fisheries, and continue work relating to the development of fishery management plans in cooperation with the Western Pacific Regional Fishery Management Council.

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R. Uchida prepared two project proposals--"Stock assessment of bottomfish resources in the NWHI" and "Ciguatera pathway studies--Hawaiian Islands"--which were submitted to Washington through the Center Director for possible funding under the Saltonstall-Kennedy Act. Both proposals call for conducting the research under contract. Uchida also continued work on the preparation of a draft report summarizing the results of the "Joint SPC-NMFS Workshop on

Marine Turtles in the Tropical Pacific Islands," which was held on December 11-14, 1979 in Noumea, New Caledonia.

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Dr. Jeffrey J. Polovina, Statistician, and Research Assistant Darryl T. Tagami continued work on the bulk biomass ecosystem model and also began examining yield per recruit models for spiny losters.

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R. Gooding reported that the manuscript, "Respiration rates and low oxygen tolerance limits in skipjack tuna," was revised and forwarded to the Center Director for approval. He also revised an internal report, "Photographic censusing for monk seals and turtles in the NWHI from U.S. Coast Guard C-130 aircraft."

Estimated Skipjack Tuna Landings in Hawaii for January Below Long-Term Average

The January 1980 Hawaii landings of skipjack tuna were estimated at 43.2 metric tons (MT), which is 9.4 MT below the January 1979 landings and 82.0 MT below the 1964-79 long-term average for January.

FISH-ENVIRONMENT INVESTIGATIONS (FEI)

Manuscript Describing Induced Spawning in Captive Kawakawa Completed

Dr. Andrew E. Dizon, Leader, Experimental Ecology of Tunas Task, reported the completion of the first draft of a manuscript describing the induced spawning of captive kawakawa, Euthynnus affinis. The authors of the paper are Dr. Calvin M. Kaya of Montana State University, who spent a year's sabbatical leave at the Honolulu Laboratory conducting the spawning experiments, Dizon, and Research Assistant Sharon D. Hendrix.

The successful spawning experiments were carried out at the Honolulu Laboratory's Kewalo Research Facility during the summer of 1979. This accomplishment is believed to be the first record of induced spawning, by means of hormonal treatment, in any tuna held in captivity. Investigations on the larval and juvenile stages of tunas have been hampered by the difficulty of capturing these young stages from the wild. The success in artificially inducing tunas to spawn in captivity is the first step in obtaining these young stages for experimental study.

Other attempts at producing young tuna have been concentrated in Japan along two lines of effort. One method has been attempts at fertilizing the ripe ova of freshly captured specimens at sea. The other approach has been to maintain adult specimens in large enclosures in coastal waters in the hope that they would eventually spawn naturally. However, because of the inherent difficulty in maintaining and working with such fast-swimming, pelagic fishes under conditions of close confinement, researchers have been discouraged from attempting to artificially stimulate their spawning.

The manuscript describes the procedures used in successfully inducing two kawakawa to spawn. The experiments suggest that this technique can be developed into a routine procedure to induce kawakawa to spawn.

LA JOLLA LABORATORY

Coastal Fisheries Resources Division

LARVAL FISHES, COASTAL EAST PACIFIC

Effects of Handling and Preservation on Body Measurements of Mackerel Analyzed

To relate laboratory larval fish studies to the field it is necessary to compare animals at the same developmental stage; thus, there is a need to intercalibrate field and laboratory larval fish measurements. Fishery Biologist G. Theilacker is analyzing the effects of handling and preservation on body measurements of jack mackerel and Pacific mackerel. Results of Theilacker's past studies on northern anchovy larvae show that shrinkage of laboratory-preserved larvae differs from shrinkage of field-collected larvae. This difference in shrinkage between laboratory-preserved larvae (pipetted directly into formalin) and netted and preserved larvae (simulated field-collected) of the same initial size decreased with age. For example, 3 mm larvae that were netted and preserved in formalin shrank 15% more than 3 mm larvae that were laboratory preserved, but shrinkage of 20 mm larvae was the same for both treatments. A 15% difference in estimated live size of 3 mm anchovy is equivalent to a difference of 2-3 days of age. Thus, for estimates of size-specific larval growth, shrinkage calibration is important for small larvae.

Conceptually, body part shrinkage (prior to onset of ossification) of all small elongate-bodied larvae (e.g., anchovy and sardines) should be similar and should differ from shrinkage of deep-bodied larvae (e.g., jack mackerel, Pacific mackerel) of the same size. However, Theilacker found that laboratory shrinkage in formalin of standard length (SL) and head length (HL) did not differ between species, and that body depth (BD) shrinkage was less for the elongate anchovy than for the robust jack mackerel (see table). During the net treatment, body depth and standard length in anchovy shrank more than in the deep-bodied forms; but shrinkage of head length was the same for the three species. The concept that shrinkage of small larvae with similar body forms should be similar was incorrect; for example, compare body depth shrinkage in the net between jack mackerel, 16% , and Pacific mackerel, 2% in the table. Unfortunately, it appears that generalizations cannot be used to estimate shrinkage of larvae with similar body forms; thus, each species must be studied individually. However, head length may be a useful reference parameter for estimating size of small larvae as shrinkage was the same in the laboratory and in the simulated field studies for the three species.

Shrinkage ratio for 3.5 to 5.0 mm fish larvae

	Laboratory-Formalin			10-m net treatment			Formalin preservation after net treatment		
	SL	HL	BD	SL	HL	BD	SL	HL	BD
northern anchovy	.92	.91	.90	.81	.91	.70	.78	.88	.67
jack mackerel	.92	.91	.80	.90	.91	.84	.87	.88	.81
Pacific mackerel	.92	--	--	.90	.90	.98	.86	.86	.94

Ratio = treated size/live size; 1.00 = no shrinkage

-- = no data

Theilacker initiated another laboratory and field intercalibration study this month. To determine growth rates, field-collected, alcohol-preserved larvae are being aged (otolith), measured, and weighed by R. Methot. Although determining larval fish length at age gives an estimate of growth of wild larvae, larval weight at age is probably a better estimate of growth in terms of energy incorporated and more appropriate for interspecific comparisons.

Preservatives cause leaching of organics and salts and thus loss of weight. To calibrate the weight loss caused by preservative leaching, Jack Metoyer, Biological Technician, is measuring body parts of laboratory, alcohol-preserved Pacific mackerel and jack mackerel larvae. The larvae will be dried, weighed, and the live size estimated using the previously determined shrinkage values. A weight loss calibration factor for Pacific mackerel will be determined by comparing estimated live size and alcohol-preserved dry weight with the relation between live-dry weight of larval Pacific mackerel and live standard length (Hunter and Kimbrell).

Evidence Indicates Northern Stock of Anchovy May Be Limited to About 4 Spawnings Per Year

J. Hunter and B. Macewicz report that Laroche and Richardson (1980) have pointed out that the northern subpopulation of the northern anchovy off Oregon and Washington probably spawn fewer times than the central subpopulation studied by the La Jolla investigators. Spawning in the northern subpopulation occurs between mid-June and mid-August and Laroche and Richardson noted degeneration of oocytes in ovaries of females taken in the peak month of July. In response to their observations, Hunter and Macewicz examined a small sample of 25 females taken in four research trawl catches taken off Oregon in July 18-21, 1977. Ovaries of ten of these females (40%) had new post-ovulatory follicles and 4 (16%) had day-old post-ovulatory follicles. Twenty-three of the ovaries from these females (92%) exhibited no or only minor atresia but the ovary from one female was in the early post-spawning condition and that from another in the late post-spawning condition. The latter female had

clearly completed spawning for the season. On the basis of this evidence Hunter and Macewicz suggest that the spawning frequency during peak month of spawning is about the same for the northern as for the central stock (about once a week), but the northern stock may be limited to about 4 spawnings per year because of the short duration of the spawning season.

Growth Rate of Larval Jack Mackerel Described

Richard Methot is continuing to describe the growth rates of various species in the California Current and recently has worked on larval jack mackerel (Trachurus symmetricus). During the first month after yolk absorption jack mackerel larvae put on weight at about the same rate as anchovy larvae, then growth of jack mackerel accelerated. The data in the table are from specimens collected in June 1979 between 100 and 150 miles off San Diego. This description of growth of jack mackerel in the sea corresponds closely to their growth in the lab as determined by Fishery Biologist Gail Theilacker of the La Jolla Laboratory.

	Mackerel		Anchovy	
Age	length	dry weight	length	dry weight
5	3.5 mm			
25	8	.0011 g	17 mm	.0018 g
40	14	.0070	21.5	.0050
50	20	.0160	24	.0090

High Phytoplankton Counts Indicate that December 1979 was Good Month for Survival of Anchovy Larvae

Sandra Paez, NOAA Junior Fellow, worked for most of January on phytoplankton collected during the December 1979 cruise of the research vessel Jordan and provided temperature and particle concentration profiles for line 90 as part of Dr. Lasker's study to delineate the area of the Southern Califoria Bight suitable for larval anchovy feeding. Strong chlorophyll maxima were present inshore along line 90 off San Onofre and line 93 off Del Mar. These were characterized by high phytoplankton counts above feeding thresholds for anchovy first-feeding larvae. December 1979, therefore, may have been a good month for larval anchovy survival.

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Preparations for a March-April cruise to the Bering Sea on the research vessel Thompson were made this month by M.E. Clarke, SIO graduate student who is working with Dr. Lasker on the survival of Bering Sea fish larvae. As part of this program, James Hendee, University of Alaska, was in La Jolla in January for instruction by R. Leong, Fishery Biologist in the Coastal Division, in maturation and spawning of fish. Hendee will be responsible for inducing pollock to spawn in captivity at the Seward Laboratory of the University of Alaska. With Dr. Howard Feder of the University of Alaska he intends to provide larval pollock on demand for laboratory and field experiments.

COMMERCIAL AND RECREATIONAL FISHERIES FOR MANAGEMENT

Census Estimates Obtained of Rockfish Larvae for CalCOFI Survey Area

John MacGregor, Fishery Biologist, reports that he is obtaining census estimates of rockfish larvae for the CalCOFI survey area for the years 1956, 1966, 1969, 1972 and 1975. The census is an estimate of the number of rockfish larvae present in the area at the time of sampling for each of five areas and for each month of the year.

The mean yearly population estimate for all rockfish for the five years is 168×10^{12} with a range of 142×10^{12} (1966) to 219×10^{12} (1969). The mean yearly population estimate for bocaccio (Sebastes paucispinis) larvae is 6.17×10^{12} or about 3.67% of total larvae. The estimate for shortbelly rockfish (Sebastes jordani) larvae is 17.4×10^{12} or about 10.4% of total larvae.

The census area includes CalCOFI lines 60 through 137. Ninety-nine percent of shortbelly rockfish, 97% of bocaccio, and 87% of all rockfish larvae were taken in the area represented by lines 60 through 93.

Stock Assessment Task Force Meets in Seattle

Director I. Barrett and Dr. Gary Stauffer attended the second workshop of the Stock Assessment Task Force held in Seattle January 15-18. The purpose of this workshop was to obtain a review of the current draft document by the Center Directors. Considerable attention was given to the sections on Introduction, Adequacy and Recommendation. Because Dr. L. Alverson, Chairman of the Task Force, will soon retire, he will recommend to Terry Leitzell, Asst. Administrator for Fisheries, that Barrett take over as chairman of the Task Force. Multiple copies of the draft will be distributed to the Center in early February for an informal review to include a limited number of state or university people. The next draft will be ready for the meeting of the Center Directors in La Jolla in early March.

Plans Made for the 1980 Anchovy and Hake Biomass Surveys

The initial plan of four CalCOFI surveys over the months of February through June has been modified as the result of the delay in the arrival of the Soviet research vessel, Tikhookeanskiy. The Tikhookeanskiy was originally scheduled to conduct 1-1/2 surveys of the CalCOFI pattern beginning in the week of January 29. The arrival of the Soviet vessel has been delayed to the week of February 19, which will reduce the survey coverage by one month and reduce the need for the Soviet vessel to one 30-day survey. This will, however, provide sufficient coverage of the hake spawning population, so that the necessary information can be given to the NWAFC for their pre-season evaluation. A decision will be made in early February by Coastal Division staff on whether to continue with a further abbreviated three cruise larva survey and/or to implement the egg/gonad survey method pioneered by the Coastal Division over the past 2 years.

Fishery Management Council Votes to Adopt New Option to Anchovy Plan

The Pacific Fishery Management Council voted on January 9 to adopt a new option to the anchovy FMP that would allow a reallocation of the unused portion quota reserve for the Monterey fishery by June 1 to the southern fishery. This option will require that NMFS survey the Monterey industry prior to the reallocation to determine how much of the northern special allocation can be returned to the general quota. In order to put this new procedure in effect, Dr. Dan Huppert, team chairman, prepared a detailed explanation of the industry survey to be included in the plan amendment. Alec MacCall will present the final version of the amendment for Council consideration in February.

California Limited Entry Fisheries Reviewed

Dr. Dan Huppert completed a manuscript of a paper which he will present to the "Seminar on Economic Aspects of Limited Entry and Associated Fisheries Management Measures" sponsored by the Department of Primary Industry, in Melbourne, Australia, in early February. The paper entitled, "California's Management Programs for the Herring Roe and Abalone Fisheries" examines the limited entry programs recently established in the California fisheries for herring roe and abalone. In this paper Huppert summarizes the structure, history and management of these fisheries. Also, he presents a tentative evaluation of the State's management program with emphasis on the limited entry aspect. Focusing on biological, economic and social criteria, the evaluation finds a mixed record. Over the short time span of the program, the biological objective of fish stock conservation seems to be achieved in herring, but the record is less certain for the abalone. Large economic profits indicate that limiting entry into herring has successfully generated resource rents for the fishermen. The abalone fishery does not yet show great signs of economic progress. The social objective of distributing the benefits

of the fishery widely was evidently influential in the evolution of the management program, but no explicit statement of the objectives has been documented. Lack of an explicit statement of biological, economic and social goals is cited as a problem which threatens the continuation of the economic gains that have been made.

Analysis Prepared of Fishing Vessel Construction in the U.S. Since FCMA

Jane McMillan reports progress towards the analysis of the construction of fishing vessels in the United States. She has completed a first draft describing the research conducted thus far, entitled "The Impact of the Fishery Conservation and Management Act (FCMA) on Fishing Vessel Construction in the United States." The passage of the FCMA in 1976 brought the anticipation of increased U.S. participation in fisheries within the 200-mile economic zone. The replacement of foreign fishing vessels by U.S. vessels was predicted to be one of the benefits of the FCMA. There has been an apparent increase in the construction of fishing vessels in the U.S. since the passage of the FCMA. The study that McMillan has been conducting analyzes the extent to which newly stimulated construction of fishing vessels is attributable to the FCMA. This requires an understanding of what stimulates investment in the fisheries.

McMillan's study proceeds in two steps: first, the development of a model which analyzes investment in the fisheries, and second, use of this model to analyze the impact of the FCMA on fishing vessel construction in the U.S. Two models are presented: the first is a stock-demand model where the dependent variable is the total stock of fishing vessels, and the second is a flow-investment model with the new investment each year as the dependent variable. In both models, the independent variables to be considered include the price of fishing vessels, price of products, other prices, rate of interest, and other economic variables.

In order to estimate the value of the stock of fishing vessels, it has been necessary to come up with construction cost estimates for vessels participating in various fisheries. McMillan has been estimating these construction cost equations using multiple regression techniques from SPSS (Statistical Package for the Social Sciences).

Data Analyzed to Estimate Anchovy Biomass from Alternative Methods

Doyle Hanan, Marine Biologist with the California Department of Fish and Game detailed to the La Jolla Laboratory, has completed writing a FORTRAN program to extract catch and effort information from previously created log-book files. Various catch per unit effort indices are now being examined. Preliminary results show catch per trip to be fairly constant, probably reflecting vessel capacity more than anchovy abundance. Other measures of fishing effort are being examined by Hanan.

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Susan Picquelle, Statistician, completed the preparation of the aerial resources monitoring data for final analysis by writing a program to modify the tonnages for individual anchovy sightings. The new data file contains the tons sighted during each flight by region, combining sightings during the same region and flight. This data file can now be merged with the effort data file which contains the number of CF&G blocks searched by region and flight.

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In preparation for the pending transfer of Jim Zweifel, Mathematician, to the Southeast Fisheries Center in Miami in late February, Picquelle has been studying his negative binomial weighted model for estimating anchovy egg production. This includes related problems in fitting growth curves and mortality functions. Prior to Zweifel's departure, Picquelle will have duplicated his computer analysis on 1979 anchovy egg samples to estimate daily egg production so that the Division will be prepared to make the 1980 biomass estimate from the egg/gonad survey if needed.

Paper Presented on Fishery-Seabird Interactions

Alec MacCall, California Fish and Game Marine Biologist at the La Jolla Laboratory, presented a paper entitled "Fishery-Seabird Interactions: a simulation of trophic effects" at the Pacific seabird group meeting in Monterey on January 24. Seabird populations, such as the endangered brown pelican, are highly regulated by food availability. By reducing fish biomass, a fishery may cause a decline in seabird populations which depend on the same food source. Seabirds may not be seriously affected by light fisheries, but may decline abruptly at higher fishing intensities. Serial correlation in fish abundance (e.g. one year tends to be like the next) causes a high long-term variability in both prey and predator abundance, making it very difficult to assess the condition of either resource with regard to fishery effects.

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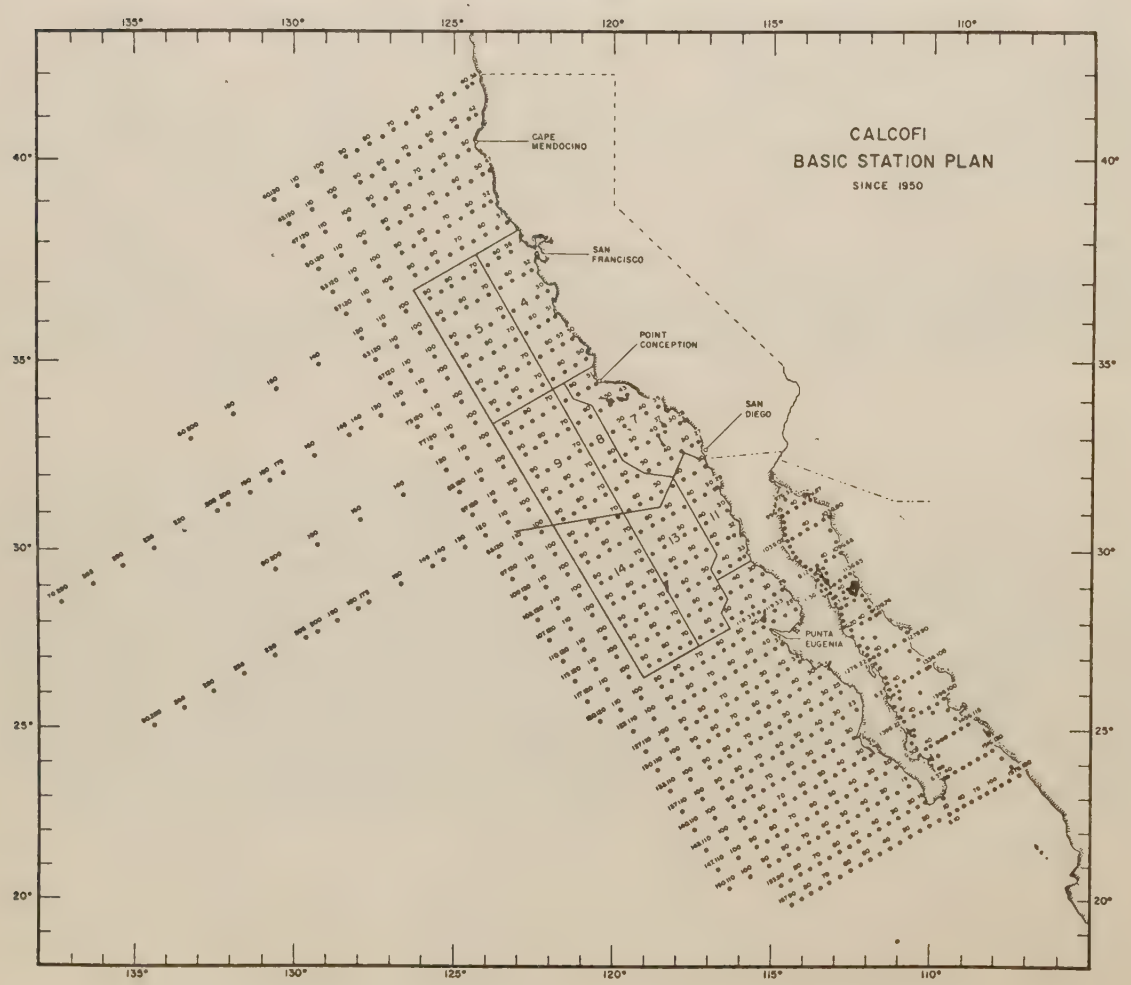
MacCall also completed a short manuscript entitled, "On the number of samples necessary to estimate faunal composition," in response to the question of how many samples are needed for a diving survey to detect 90% of the known faunal species in a survey area. Previous diving surveys have used a "rapid visual technique" wherein a binomial distribution is used to calculate the number of sampling stations necessary to detect a given percent of a species list. This method appears to underestimate the true level of effort which is necessary. A method based on a geometric probability distribution appears more reliable and appropriate for calculation of proper sampling intensity.

MULTISPECIES, COASTAL EAST PACIFIC (CalCOFI)

Computer Program for Particle Counter Revised

The Free Fall Particle Counter (FFPC) developed by Reuben Lasker and Jack Brown is capable of rapidly collecting data on the vertical distribution of particles suitable as prey for first feeding anchovy larvae. Richard Methot, graduate student at the Scripps Institution of Oceanography who is working at the Southwest Fisheries Center, recently completed revision of a Hewlett-Packard 9825 program which accepts data from the FFPC, plots particle concentration versus depth, determines the proportion of the water column with particle concentrations sufficient for successful first feeding by anchovy larvae, then stores the data on HP tape for later analyses. This processing is completed five minutes after the cast.

The program written by Methot will analyze a standard cast with minimal operator input but is also capable of computing the frequency distribution of counts as the operator specifies various length scales and threshold values. This flexibility will be of particular value to on-going microdistribution studies being conducted by Dr. Robert Owen at the La Jolla Laboratory.



Oceanic Fisheries Resources Division

TUNA AND BILLFISH RESOURCES PROGRAM

Fifth North Pacific Albacore Workshop Scheduled at La Jolla Laboratory in Mid-Year

Fishery Biologist Norman Bartoo has completed initial preparations for the 5th North Pacific Albacore Workshop scheduled at the La Jolla Laboratory for June 30 - July 3, 1980. Invitations have been sent to scientists in Japan, Taiwan, Canada, and to U.S. scientists in Washington, Oregon, and California.

U.S North Pacific albacore data for recent years is being compiled for entry onto a data base by Fishery Biologist Tony Majors. A data base containing historic North Pacific albacore data from the Japanese longline and surface fisheries and the U.S. surface fishery is being created by Fishery Biologist Earl Weber. These data will be used for analyses to be presented at the albacore workshop.

Development of Billfish Plan Resumed

Pacific billfish tag and recovery data for years 1963-1968 have been entered on a data base currently being edited by Fishery Biologists Jim Squire and John Cessanich. These data are being used in a descriptive analysis of the migration patterns of black marlin in the Southwest Pacific.

Squire has completed preliminary editing of a manuscript "Catch Temperature for Some Important Marine Species off California." The manuscript is to be submitted to NOAA/NMFS Technical Report Series following final review.

Squire, Chairman of the Pacific Council's Billfish and Shark Management Plan Development Team, convened a meeting of the team at the SWFC on January 11, 1980. This was the first meeting of the Management Team since it was directed by the Pacific Council to resume development of the Plan.

Tuna Vessel Participation in FAX Advisory Program Continues

During December 1979, 5 tuna seiners contributed synoptic weather data to the NMFS FAX Advisory Program. The table below compares participation in the program in December of 1978 and 1979.

	December 1978	1979
Number of vessels with equipment	48	44
Number of vessels reporting	9	5
Number of weather observations reported	68	36
Number of XBT observations reported	3	0
Total Observations	71	36

Biological Sampling of Foreign Imports of Atlantic Tunas Continues in Puerto Rico

Atlantic-caught tunas transshipped to Puerto Rico have been sampled routinely for biological information by Technician Eugene Holzapfel of the La Jolla Laboratory since March 1975. Data on fork length, weight and species composition were collected.

Results of sampling during the year 1979 are as follows:

Species	Gear	No. of Samples	No. of Fish Sampled	Tonnage Sampled (MT)
Yellowfin	Baitboat	54	3392	1047
	Purse Seine			
	Unknown			
Skipjack	Baitboat	26	1318	3331
	Purse Seine	17	861	5517
	Unknown (LL)			
Bigeye	Baitboat	37	1848	395
	Purse seine			
	Unknown			
Albacore	Longline	5	220	1124
TOTAL		139	7,639	11,414

Fisheries Service Charters San Diego-Based Baitboat To Tag Skipjack Tuna in the Atlantic

Under charter to the National Marine Fisheries Service, the 86-foot steel baitboat, Rhonda Sue, is enroute to Ponce, Puerto Rico to take aboard a

scientifc complement of three and begin a 3-month skipjack tuna tagging project in the western Atlantic. According to Ron Rinaldo, Fishery Biologist at the La Jolla Laboratory, who is the principal investigator and cruise coordinator, the project is the beginning of an international effort, sponsored by the International Commission for the Conservation of Atlantic Tunas, to which the United States is a signatory, to tag 10,000 skipjack tuna with dart tags on this first cruise.

"The primary purpose of this tagging project" explained Rinaldo, "is to understand better the distribution, migration and stock structures of Atlantic skipjack tuna. The area we will investigate will center in the Lesser Antilles to the northeast coast of South America as far east as French Guina."

Because of their extensive experience in tuna fishery research, Rinaldo said that NMFS has selected Living Marine Resources, Inc. (LMR), a San Diego fishery consulting firm, to coordinate the logistics of the cruise. Scientists participating in the tagging operations will be fishery biologists Wes Parks, Leader of the Tuna/Billfish Resources program, Earl Weber, David Bickford and Rinaldo from the La Jolla Laboratory, and Philippe Vergne and Charles Peters from LMR.

Almost three years in the planning, the program now known as the International Skipjack Year Research Project was developed and coordinated by ICCAT. "The rationale for the research," said Rinaldo, "is that scientists believe that skipjack tuna is the most abundant of the commercial species of tuna in the Atlantic. It was not exploited on a large scale until recently, but since 1961 catches have increased rapidly, reaching a maximum of 117,000 tons in 1974, of which 19,973 tons was taken by United States flag fishing vessels. This catch represents a revenue of more than 2 million dollars to U.S. fishermen at today's prices."

With growing world demand for tuna and the fact that little increase in catch can be expected from the larger species of tuna from any ocean, including the Atlantic, there is an obvious opportunity for expanding production from Atlantic skipjack tuna, Rinaldo stated. However, apart from a general feeling among fishery scientists that these stocks are not yet fully exploited, there is at present insufficient information to plan this expansion in a rational manner, avoiding on the one hand any failure to take advantage of opportunities where they exist, and on the other, damaging the stocks and the fisheries on them through overdevelopment and overexploitation.

"As the program is currently designed," continued Rinaldo, "it is to extend for four years starting with a planning phase during the first year (1979), continuing into a limited execution phase in the second year (1980), rising to a peak "International Skipjack Year" in 1981, and then winding down with an analytical evaluation of the data collected in the fourth year (1982)."

According to Rinaldo, the proposed program is designed not as a fully ICCAT funded and controlled program but rather one in which ICCAT ccordinates the collective inputs of the 19 ICCAT member countries, who will supply vessels, gear and research expertise throughout the Atlantic.

A major objective of the tagging in the western Atlantic will be to obtain information on the relationships between skipjack stocks in the western Atlantic and those in the eastern Atlantic. The tagging will be conducted from the Rhonda Sue during the first half of the year from February 1 to mid-April, 1980, when skipjack tuna seems to be the most abundant.

Rinaldo explained that a baitboat was selected to carry out the actual fishing operations rather than a purse seiner since tuna collected and tagged from a purse seine have a very low rate of survival. The Rhonda Sue, captained by Ted Sween, will fish 12 hours a day, 7 days a week throughout the cruise. The vessel is first scheduled to work off the Dominican Republic, Puerto Rico, and the Virgin Islands. Subsequent fishing areas will include the waters between Martinique and Barbados off the northeast coast of South America to Surinam.

In addition to tagging fish, scientists will measure, weigh, and sex individual fish and take biological samples for return to the La Jolla Laboratory. Throughout the cruise, routine meteorological and oceanographic observations will be collected.

The Rhonda Sue will complete the scheduled tagging activities in early May in Balboa, Panama and, following a brief fishing trip in the Pacific, will return to San Diego by late June 1980.

Displaying the blue and yellow flag which the charter vessel, Rhonda Sue, will display during the cruise to tag skipjack in the Atlantic are from left: Ron Rinaldo, Bob Nydam, Sam Herrick, Stan Moore, Al Coan, Norm Bartoo, Wes Parks and Hillary Herring-Dyal.

MARINE MAMMAL BIOLOGY AND TECHNOLOGY PROGRAM

Preparations Continue for March Hearings on New Regulations Governing Tuna/Porpoise Fishing, 1980-1983

Dr. William F. Perrin reports that he, James Coe, and other members of the OFRD staff in cooperation with Ron Naveen, NMFS General Council, Washington, D.C., have been preparing for the upcoming hearings now set for March 17-28, on proposed regulations for Yellowfin Tuna/Porpoise Fishing for 1980-1983. Preparations included completion of a draft of the Environmental Impact Statement (DEIS) published in the Federal Register, February 1, 1980. Among other points brought out by the DEIS is the matter of the impact of

"sundown sets" on porpoise mortality, examined by Jim Coe. Coe found that for cruise data from 1977, 78 and 79, sets in which backdown occurred after sunset, "were responsible for a disproportionate share of the observed porpoise mortality."

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Perrin completed the first final draft of the taxonomic study of the spinner dolphin, Stenella clymene, from the tropical Atlantic. Ithas just been sent outto reviewers.

Perrin further reports that in January the first draft of the new edition of the Field Guide for Northern Pacific Cetaceans was completed by J.S. Leatherwood (Hubbs-Sea World Research Institute), R.R. Reeves (Smithsonian Institution), W.F. Perrin (SWFC), and W.E. Evans (Hubbs-Sea World Research Institute). The work is being reviewed and will be submitted for consideration for publication as a NMFS Circular.

USSR-US Meeting on Joint Marine Mammal Research Postponed

A proposed week-long meeting in Miami between Soviet and U.S. marine mammal scientists which had been scheduled for January to discuss new and ongoing joint research projects has been postponed by the Soviets at least until March, according to Perrin. This will delay further collaboration between U.S. and Soviet scientists on two volumes, in preparation, on pinniped and cetacean biology and may disrupt 1981 research projects such as joint studies of marine mammals in the Black Sea in which two scientists from SWFC were scheduled to participate. The reason given by U.S.S.R scientists for the postponement was that two of their contingent have been stricken with sudden illnesses.

Cooperative Marine Mammal Program Agreement Circulated

John Henderson, Leader of the Marine Mammal Salvage Project, has drafted a letter of understanding for the proposed cooperative salvage effort of marine mammals along the southern and Baja California Coast. The purpose of the program is to ensure prompt response by qualified marine mammalogists to any marine mammal stranding in the region for collection of specimens and basic biological data. The letter, which outlines systematic procedures for specimen and data collection, has been circulated to ten cooperating institutions including the Los Angeles County Museum of Natural History; Hubbs-Sea World Research Institute; Scripps Institution of Oceanography; Autonomous University of Ensenada, Ensenada, B.C.; and Naval Ocean Systems Center, San Diego.

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Dr. Al Myrick happily reports that all of the papers, abstracts and final draft of the workshop report of the International Conference on Determining Age of Odontocetes and Sirenians have been sent to the International Whaling Commission for publishing. The work, edited by W.F. Perrin and Myrick will appear as one volume, and is expected to be available by late 1980.

MARINE MAMMAL ASSESSMENT AND MONITORING PROGRAM

NOAA Research Vessels Work Together to Investigate Porpoise Density Gradients

The NOAA research vessels, David Starr Jordan and Townsend Cromwell departed San Diego and Honolulu respectively on January 3 to investigate differences in density of porpoise in various areas of the porpoise-tuna fishery in the eastern tropical Pacific. At this writing, Dr. D. Au, Scientist-in-charge, reported both vessels were proceeding on schedule but were experiencing heavy seas.

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LCDR W. Perryman of the NOAA Corps is continuing his examination of porpoise school sizes from photographs taken during the recent IATTC tuna vessel charter. He reports that there is a high degree of correlation between photographic school size counts and estimates derived from aerial and ship board observers.

Computer Programs Used to Monitor Porpoise Mortalities Revised

During January, Bruce Wahlen, Statistician, and Fred Dickson, Computer Sciences Corporation consultant, completed a project begun in December to revise the computer programs used to monitor porpoise mortalities incidental to purse seine fishing for tuna by U.S. vessels in the eastern tropical Pacific Ocean. Programs which update the vessel trip data base were modified so that vessel trip information on the data base will reflect actual fleet activities more accurately. The mortality estimating program was expanded so that combined sample statistics from NMFS and IATTC observed trips can be used to provide not only point estimates of mortality by stock but also variance estimates.

Wahlen also noted that the 1980 quota has been exceeded for northern tropical common dolphin, with the reported kill exceeding the allowable kill of 70. Projections have not been made of the total kill thus far this season.

PACIFIC ENVIRONMENTAL GROUP

Model Developed to Assess Effects of Size Limit on the Pacific Mackerel Fishery

In cooperation with Rick Klingbeil of the California Department of Fish and Game, Dr. R. Parrish, Fishery Biologist, has developed a model to assess the effects that a size limit would have on the Pacific mackerel fishery.

The California Pacific mackerel stock has shown a very strong recovery from its extremely depressed condition in the late 1960's and early 1970's. The rebuilding of this stock under the moratorium imposed by the State of California and the present controlled exploitation of Pacific mackerel has allowed the stock to rebuild to the extent that over 30,000 tons were taken in 1979.

The present fishery is concentrating heavily on young-of-the-year fish. This was not true in the early fishery, but it also occurred during the period of the collapse of the fishery in the 1960's.

The model developed by Parrish is a further development of Parrish and MacCall's (1978) model which was expanded to run on monthly intervals to allow the inclusion of seasonally varying growth rates and a season fishery.

The results of the model were presented by Klingbeil and Parrish at a meeting in Long Beach on January 11 and was attended by California Fish and Game management personnel, fishermen and industry representatives.

The analysis predicts that a size limit, which would protect young-of-the-year fish, would result in a long term mean catch of 26,000 MT. The long term mean yield without the size limit would be 23,500 MT per year. In addition the long term mean biomass is considerably higher with a size limit, 149,000 MT vs 138,000 MT.

TIBURON LABORATORY

Pink Shrimp Management Plan

The Pacific Fishery Management Council's Pink Shrimp Management Plan Development Team met at the Tiburon Laboratory in January according to Laboratory Director Norman Abramson, a team member. The team, which had completed a second draft of the plan, reviewed comments from the Northwest Region, the Office of the NOAA General Counsel, and the Pacific Management Council. The plan is being modified and a third draft will be submitted to the Council at their May meeting.

FISH COMMUNITIES INVESTIGATION

Study of Morphology Yields Ecological Insights

A unifying theme of projects in the Fish Communities Investigation at the Tiburon Laboratory has been the contention that effective fisheries management requires understanding ecological relationships. Many species exhibit evidence of these relationships in their morphology, so that morphological studies can give insight into how fishes relate to the circumstances under which they live. Exemplifying this philosophy is the study of sexual dimorphism in four rockfish species by Tina Echeverria, Fishery Biologist in the Rockfish Analysis Task.

The four species examined--Sebastes melanops (Figure 1a), S. flavidus, S. serranoids, and S. mystinus (Figure 1b)--aggregate by species, with males and females staying together throughout the year. The first three species are piscivorous, whereas the last is a planktivore. A large series of specimens of all four species has shown that at a given age the females are longer than the males, but that the males have a larger eye. In addition, males of the three piscivorous species (but not the planktivore) have longer pectoral fins. Echeverria has prepared a manuscript that describes these features and suggests their possible adaptive significance.

Probably the female's greater length is an adaptation in her role in reproduction. As in all Sebastes spp., these females carry their developing embryos for about a month. Study has shown that fecundity is proportional to the female's body length, so one would expect that strong selection pressures exist for longer females. But a longer body would increase her swimming speed and this would, in turn, generate pressures for some adaptive response in those smaller males that would co-exist with her. The longer pectorals and larger eyes may be this response. That the longer pectorals occur only in the three piscivores, however, suggests that this feature may permit the males to compete successfully with the larger females for elusive prey. (Swimming speed would be much less important in the planktivorous habits of S. mystinus.)

Echeverria gave a preliminary presentation on her Master's thesis entitled: "Sexual dimorphism in four species of rockfish (Pisces: Sebastes)" at the Tiburon Laboratory on January 25.

FISHERIES DEVELOPMENT INVESTIGATION

NOAA Research Vessel Oregon to Aid Fishery Development Investigations

Plans are being prepared for the upcoming cruise on the research vessel, Oregon, which is being made available to the Tiburon Laboratory by the NMFS Northwest and Alaska Fisheries Center. A week of cruise time in March will be used for Fishery Development Task activities. According to Sus Kato, Chief of the Task, a new euphausiid fishing trawl will be tested. The catch will be freeze-dried as well as simply frozen, and the products evaluated by potential users. Fishery Biologist Daniel Ralph will also initiate a study on the biology of and fishery for euphausiid shrimps in the Monterey area.

Another new net, a Spanish "semi-pelagic" trawl, will also be tested during the cruise to learn if it is effective in catching shortbelly rockfish while avoiding capture of other species. If successful, the trawl should enable fishermen to fish close to the bottom (about one meter off the bottom) without the aid of costly electronic "net monitors." Large samples of shortbelly rockfish will be packed and frozen by a Monterey processor and shipped to Japan for market evaluation. Other samples will be shipped to Los Angeles, where technicians from Japan will study the fish's merits as "surimi" (a processed minced fish product). Earlier tests conducted by Lt. Patrick Rutten and Sus Kato resulted in a product which had good flavor and color, but lacked the cohesiveness and elasticity desired by the Japanese market. If time allows, trial fishing for sanddabs and experimental fishing in deep water will also be carried out.

Edward Ueber and Lt. Rutten went fishing at Drakes Bay aboard a commercial crabber to collect live rock crabs, for market evaluation in Japan. Cooled, unfrozen rock crabs sent previously elicited a favorable response, but potential buyers apparently prefer live crabs.

PHYSIOLOGICAL ECOLOGY INVESTIGATION

Covered in Two Recent Television Programs

Striped bass pollution research of the Physiological Ecology Investigations at the Tiburon Laboratory was covered in two recent television programs. Some of the more significant findings and photomicrographic displays were presented in an ABC special--Oceans: The Last Frontier. Investigation Chief, Dr. Jeannette A. Whipple, also discussed striped bass research and demonstrated research and autopsy techniques for Station KGO-TV, San Francisco, on January 21, 1980. The purpose of this media coverage was to bring attention to research efforts on the west coast striped bass population and the need to understand why it is in a state of decline.

Striped Bass Meeting

Plans were formulated for a meeting on February 14 at the Tiburon Laboratory of the Physiological Ecology Research Program with all cooperating and contracted agency and university personnel, to coordinate striped bass research effort at the Tiburon Laboratory. The meeting agenda will include planning of sampling efforts in the San Francisco Bay-Delta areas for the upcoming research year.

SOUTHWEST REGIONAL DATA MANAGEMENT AND ADP OPERATIONS

Committee Formed to Develop a Tuna Data Management System

Recently, Izadore Barrett, SWFC Director, formed a committee to design, develop and implement a Southwest Tuna Data Management System (TDMS). Fletcher Riggs, Honolulu Laboratory, Al Coan, Oceanic Fisheries Resources Division and Fred Kellenberger are members of the committee. It is envisioned that the TDMS will contain five major data bases: Environmental, Socio-Economic, Biological, Total Catch, and Catch Effort. Data will be obtained from a variety of sources: states, counties, Coast Guard, NMFS, IATTC, ICCAT, processors, wholesalers, etc. The committee met on January 22-23 in Honolulu to design the TDMS. A draft design report of the TDMS should be completed Febuary.

ORION (Oceanic Research Interactive Onboard Network) Project

Lt. Mark Sullivan, NOAA Corps officer assigned to the Center's ADP group, reports that a meeting was held with CalCOFI users on January 9 to evaluate the ORION performance in the December cruise. The consensus was that the system satisified user requirements except for some minor problems. The software cost and timetables to correct the minor problems were identified and a contract will be issued in February to upgrade the software. Included in this contract is a task to transfer ship data to the Center data bases. The system to due this is a NORTHSTAR micro-computer.

Other Data Management Activities

Dorothy Roll, Computer Systems Analyst, Chuck Oliver, Porpoise Data Manager, and Rich Charter, CalCOFI Data Manager, have revised the SWFC ADP Requirement Study Report. They incorporated all relevant suggestions by users in the La Jolla, Honolulu, Tiburon and Monterey Laboratories and the Southwest Region. The revised report will be distributed for review and comments the first week of February.

Progress continues on the creation of the 1975 and 1976 commercial fish landing summary files for Calfornia, Oregon and Washington in the Coast Wide Data System. The documentation of the system and the user's manual have been drafted and will be submitted for review in February.

Oden Burris, Computer Programmer, is analyzing specific blocks of COBOL code in the Financial Reporting System (FRS). He is resolving 2 problems: 1) costs for reimbursable tasks that incur labor costs and 2) the dropping of a minus sign "-" when the year-to-date commitments by task information is summed to both the TDP report and the Center report.

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Robert Butler, Computer Programmer, is investigating the UCSD's CATT Word Processing system which is accessible to the La Jolla Laboratory. CATT is part of U.C. Berkeley's UNIX System, which was developed by Bell Laboratories. UNIX is a general-purpose computer system; the Text Editor and Word Processor (WP) utilities are just two of UNIX facilities. It is hoped that the CATT system can be utilized to support some of the laboratory's increasing word processing needs.

Butler is also developing a "text editor" FORTRAN software package on the INFONET system. His text editor resolves routines not available on INFONET, such as right/left justification of lines and the concatenation of lines. These two routines are useful for developing internal documentation of computer programs and for producing "print" program code. "Print" (line identation) technique is a cost-effective aid for program debugging and program maintenance.

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Dorothy Roll attended a working documentation group meeting in Seattle from January 15-17. This working group is a subcommittee designated by the National Data Management Committee to develop documentation standards. The documentation standards under development encompass the stages of systems proposal, design, implementation and maintenance. The subcommittee is composed of a technical person from headquarters and from each of the Centers. The five members are Dale Sortland (chairperson) from the Data Management and Information Systems Division, John Houghton (SEFC), Kay Paine (NEFC), Dick Baie (NWAFC) and Dorothy Roll (SWFC). The results from this workshop, the second since its inception, will be submitted at the National Data Management Committee meeting in March.

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On January 30 a three-hour VAX computer training session for the La Jolla staff was conducted by UCSD's computer consultants: Jerry Fitzsimmons, Joe Fahle and Russ Glenn. The instructions covered 1) creating a FORTRAN program on the VAX system, 2) using the editor to modify a FORTRAN program and 3) briefing on the math packs: SPSS and BMDP. The lecture was followed by on-line demonstrations on the keyboard terminal in the ADP workroom. The user's response to this training session was excellent.

MISCELLANEOUS

PUBLIC AFFAIRS

January 15 - A class from Palomar Junior College, with their instructor, Lester Knapp, visited Dr. Geoff Moser and his staff for an explanation of larval fish research. Knapp has brought a class from Palomar Junior College to the Center for the past four years.

PRESS RELEASE

January 11 - Issued by the Honolulu Laboratory - "NMFS Joins SPC to Sponsor Marine Turtle Workshop for Pacific Islanders."

TRAINING

January 30-31 - A. Myrick, Chairperson of the EEO Committee for 1980 at the La Jolla Laboratory, and D. Hobbs, member of the EEO Committee were in Los Angeles, California to attend an EEO training course.

HONORS AND AWARDS

January 15 - Norman J. Abramson, Director of the Tiburon Laboratory, has been reappointed to serve on the Educational Advisory Committee to assist in the evaluation and assessment of Marine Environmental Technology, Marin Community College District, for the coming year.

SEMINARS

Honolulu Laboratory

January 8 - Dr. John L. Munro, Dean, Faculty of Science, University of Papua New Guinea, spoke on "Assessment of multispecies fisheries: A problem in community dynamics."

10 - Dr. Munro spoke on "Development and management of fisheries in the Third World."

La Jolla Laboratory

January 18 - David G. Deuel, NMFS Coordinator for Marine Recreational Fisheries Statistics Survey, Washington, D.C. presented a talk on "Methodology and Status of Marine Recreational Fisheries Statistics Survey for Pacific Coast."

21 - Messrs. Loren Haury and Jim Simpson, Marine Life Research Group, Scripps Institution of Oceanography, discussed "Coastal Fronts in the California Current."

Tiburon Laboratory

January 10 - Dr. Jeannette A. Whipple of the Tiburon Laboratory gave an informal talk entitled: "The Effects of Pollutants on Fishes" to the Central California Chapter of the American Institute of Fishery Research Biologists at their meeting at Vallejo, California.

VISITORS

Honolulu Laboratory

January 7 - Dr. Y. Matsuda of the East West Environment and Policy Institute, East West Center, met with R. Shomura to discuss the visit of the Japanese fishery training vessel, Hokusei Maru, in Honolulu during January 30 to February 1.

- Dr. Peter Miyake, International Commission for the Conservation of Atlantic Tunas, Madrid, Spain, who was on a 2-week Hawaiian holiday, met briefly with R. Shomura.

8 - Dr. John Caperon, Director, Hawaii Institute of Marine Biology, met with R. Shomura to discuss the research plans of the Institute.

- Dr. Dennis M. Devaney, Chairman, Department of Zoology, Bernice P. Bishop Museum, met with R. Shomura to discuss the transfer of the Honolulu Laboratory invertebrate collection to the Bishop Museum.

- Dr. Paul Callaghan of the University of Guam, met with R. Shomura to discuss research in the western Pacific.

11 - Bud Walsh, NOAA Deputy Administrator, Washington, D.C.; Paul M. Daugherty, NOAA, National Weather Service (NWS), Pacific Regional Headquarters (PRH); Graden Harger, NOAA, NWS, PRH, met with R. Shomura to learn about Honolulu Laboratory activities.

18 - Sean Martin of Waianae, Oahu, captain of the vessel, Finback, visited R. Shomura to obtain information about fishing activities around Palmyra Island.

24 - R. Shomura was visited by William G. Court of the Japanese Fisheries Service, Tokyo. They discussed plans for a cooperative squid project involving the Honolulu Laboratory, University of Hawaii Sea Grant, and a Japanese university (probably the University of Hokkaido).

La Jolla Laboratory

January 8 - Dr. Gerald B. Talbot, U.S. Fish and Wildlife Service (Retired), Bellevue, Washington.

15-16 - Ron Naveen, NMFS General Counsel, Washington, D.C. at Center to meet with members of the Oceanic Fisheries Resources Division. Naveen will present the government's case at the Administrative Law Judge hearings on future porpoise regulations.

18 - David Deuel, NMFS, Resource Statistics Division, Washington, D.C.

25 - Dale C. Gough, NASO, Seattle

- Harold Alabaster, NOAA Public Affairs, Seattle, WA.

- Robert W. Holt, Dolphin Marine Research, Winthrop, WA.

29 - Peter C. Rothlisberg, CSIRO, Australia.

- Donald Wiesnet and Craig Berg, NOAA/NESS, Washington, D.C.

Pacific Environmental Group

January 4 - Steve Cook, Atlantic Environmental Group, Narragansett, R.I.

15 - Julie Brandlin, AMBAG, Monterey, CA.

- Dave Thomas, California Dept. of Fish and Game, Menlo Park, CA.

28 - Dr. Bill Sprigg, National Climate Program Office, NOAA, Rockville, MD.

30 - Will Barber, University of Alaska, Fairbanks, AK.

- Damon Delastry, Virginia Institute of Marine Sciences, Newport News, VA.

31 - Drs. Mike Orbach and Roy Mendelssohn, Marine Studies, University of California at Santa Cruz, Santa Cruz, CA

Tiburon Laboratory

January 3 - Charles Smithline, Cruz Bay, St. John Virgin Islands.

7 - B.E. Grinnell, U.S. Coast Guard, San Francisco, CA.

- Tokihide Ichinose, ABS Fishing Company, San Francisco, CA.

- C.W. Partridge, Jr., California Sea Freeze Corporation Corte Madera, CA.

9 - Marvin Jung, State Water Resources Control Board, Sacramento, CA.

15 - William Clark, University of Washington, Seattle, WA.

- Tom Dark, Northwest and Alaska Fisheries Center, Seattle, WA.

- Al Millikan, Washington Department of Fisheries, Seattle, WA.

16 - Sue & H.C. Monroe, College of San Mateo, San Mateo, CA.

17 - John G. Carlisle, Jr., California State Fisheries Laboratory, Long Beach, CA.

22 - John Geibel, California Department of Fish and Game, Menlo Park, CA.

- Jim Golden, Oregon Department of Fish and Wildlife, Portland, OR.

- Jerry Lukas, Oregon Department of Fish and Wildlife, Portland, OR.

- Rod McInnis, Pacific Fishery Management Council, Portland, OR.

- Tom Northrup, Washington Department of Fisheries, Montesano, WA.

25 - M.G. Bradbury, San Francisco State University, San Francisco, CA.

28 - Gunter R. Seckel, Pacific Environmental Group, Monterey, CA.

29 - Izadore Barrett, John Carr, Fred Kellenberger, David Mackett, Ben Remington and Gary Sakagawa of the SWFC, La Jolla, CA.

- Raymond Pierotti, Dalhousie University, Santa Cruz, CA
- Richard S. Shomura, Honolulu, HI.

31 - Charles Beyor, Exports International, Tiburon, CA.

- Stephanie Pincote, Port of San Francisco, San Francisco, CA.

MEETINGS AND TRAVEL

Honolulu Laboratory

January 7 - William Bodde, Jr., Director, Pacific Islands Affairs, Department of State, Washington, D.C.; Michael Verne Connors, First Secretary of Embassy, United States (Political Advisor, CINCPAC); and Ira Wolff, State Department economist, met with R. Shomura to discuss current status of negotiations with island governments, primarily the Cook Islands.

- Dr. Michael F. Adams, R. Uchida, and H. Yoshida attended a meeting of the Spiny Lobster Plan Development Team in the Honolulu Laboratory conference room.

9 - R. Shomura had a meeting with Brian and Pattie Johnson and R. Uchida regarding Hawaiian monk seals.

14-16 - Shomura participated in the Western Pacific Regional Fishery Management Council's working group meetings and the 16th Scientific and Statistical Committee meeting at the Ala Moana Hotel.

16 - Shomura, Dr. A. Dizon, and George Balazs of the Hawaii Institute of Marine Biology, University of Hawaii, met to discuss marine turtles.

17 - Shomura and Dizon met with Hawaii Department of Transportation officials to discuss the Kewalo lease and long-term plans for the Kewalo area.

18 - Shomura, R. Uchida and B. Ito met with Dr. Y. Hokama of the University of Hawaii's John A. Burns School of Medicine to discusss ciguatera research.

- Dr. Philip Helfrich, Associate Dean of Research, University of Hawaii, and George Balazs of the Hawaii Institute of Marine Biology met with Shomura to discuss marine turtle research.

21 - Shomura and Uchida, Brian and Pattie Johnson, U.S. Fish and Wildlife Service and Hawaii Fish and Game personnel met to coordinate plans for this year's NWHI research activities.

21-23 - Shomura was in Seattle to meet with (1) Adm. E.A. Taylor of Pacific Marine Center and (2) Center Director I. Barrett and Dr. M. Tillman of the Marine Mammal Laboratory, Northwest and Alaska Fisheries Center, regarding Hawaiian monk seals.

25 - Shomura, together with Doyle Gates and Robert Iversen of the Western Pacific Program Office, Southwest Region, attended a briefing convened by the Advisory Committee to the Pacific Basin Economic Development Conference at the Federal Building.

28-31 - Shomura traveled to Tiburon to attend the Center Management meeting.

La Jolla Laboratory

January 7 - Director I. Barrett, Deputy J. Carr and Planning Officer D. Mackett attended a State/Federal meeting in San Diego.

7-8 - Barrett attended the Statistical and Scientific Committee meeting of the Pacific Fishery Management Council.

8 - Huppert attended meeting of PFMC, San Diego.

- MacCall and Hanan attended a meeting of the Pacific Fishery Management Council, San Diego.

10-11 - Barrett was in Washington, D.C. to attend a meeting to discuss tuna environmental services and radio station WWD at La Jolla.

14 - Heimann met with MacCall and Hanan to review project activities, La Jolla.

14-17 - D. Roll was in Seattle at the Northwest and Alaska Fisheries Center to attend a meeting of the Documentation Standards Working Group.

15-16 - Mackett traveled to Tiburon to attend a meeting of the Groundfish Fishery Management Plan Team.

15-17 - Hanan attended a CSC-INFONET course on data base management, San Diego.

15-18 - Barrett and Dr.G. Stauffer were in Seattle to attend and participate in a Stock Assessment Task Force meeting chaired by Dr. Lee Alveson, Director of the Northwest and Atlantic Fisheries Center.

17-19 - Dr. M. Laurs traveled to San Francisco to attend a National Environmental Satellite Service meeting in Redwood City and later to participate in an EPOC planning meeting at San Francisco State College.

21-26 - F. Kellenberger, Data Systems Manager, was in Honolulu to attend a Tuna Data Management meeting and to discuss the Fishery Information Network.

22-24 - Barrett was in Seattle, Washington to attend a meeting of the Scientific and Statistical Committee of the Pacific Fishery Management Council concerning the Comprehensive Salmon Plan.

24-25 - MacCall presented a paper at the Pacific Seabird Group meeting, Monterey.

28-30 - I. Barrett, J. Carr, D. Mackett, F. Kellenberger, R. Lasker, G. Sakagawa and B. Remington traveled to Tiburon, California to attend a Center Management meeting.

31 - MacCall met with Collins (ORB) to develop fishery models for kelp bass, Long Beach.

Pacific Environmental Group

January 6-11 - Andrew Bakun traveled to San Francisco, California to attend a CSC course "Supervision and Group Performance."

8 - Dr. Douglas McLain traveled to Tiburon, California to discuss XBT sampling procedures.

11-12 - Dr. Richard Parrish traveled to Long Beach, California to discuss Pacific mackerel management with California Fish and Game personnel.

23 - James Johnson traveled to San Francisco to conduct business at the Passport Office.

24 - Margaret Lazanoff traveled to San Francisco, CA to purchase supplies at the GSA Self Service Store.

28-30 - Director Gunter Seckel traveled to Tiburon, CA to attend the Center Management Meeting.

January 29 - February 1 - David Husby traveled to Los Angeles, CA to present a paper at the Third Conference on Ocean-Atmosphere Interaction of the American Meteorological Society.

Tiburon Laboratory

January 9 - Edward Ueber, Co-Chairman of the Groundfish Plan Development Team, attended the Meeting of the Pacific Fishery Management Council in San Diego. Ueber represented the Groundfish Team and was questioned by the Council on matters relating to foreign fishing and joint ventures.

15-16 - The Groundfish Plan Development Team of the Pacific Fishery Management Council held a meeting at the Tiburon Laboratory. The main purpose of the meeting, chaired by E. Ueber, was to assign the task of monitoring the groundfish fishery to various members of the team. David Mackett of the SWFC, La Jolla, and Dr. William H. Lenarz also attended the meeting.

16-18 - Sus Kato traveled to Avila Beach and Monterey, CA to discuss fishery development problems with fish processors. Apparently, the greatest problem at present is a surplus of fish and resultant depressed prices. Traditional products such as sablefish and rockfish are difficultto market right now. Kato also discussed plans to re-establish the basking shark fishery, which he helped to develop a decade ago.

21-25 - Dr. Edmund S. Hobson traveled to Woods Hole, Massachusetts, to work with Dr. R.A. Cooper in preparing a report of the Advisory Committee for NOAA Manned Undersea Research.

22-23 - The Pacific Fishery Management Council's Pink Shrimp Management Plan Development Team Meeting was held at the Tiburon Laboratory.

24 - Dr. William H. Lenarz presented results and progress of work in his program at the Research Council meeting held at the Tiburon Laboratory.

25 - Dr. Jeannette A. Whipple traveled to New Orleans, LA to participate in meetings held by the Petrochemical Committee within the National Microconstituents Task. Laboratory studies of the synergism between PCBs and petrochemicals were planned in preparation for sending out requests for proposals.

29-30 - The Southwest Fisheries Center's quarterly Management Meeting was held at the Tiburon Laboratory.

PERSONNEL

Honolulu Laboratory

January 11 - George C. Evering, Biological Technician (Fisheries) - Resignation.

15 - Henry M. Kishinami, Biological Aid (Fisheries) - Completion of 700-h Appointment.

17 - Suzanne A. Ellard, Time and Leave Clerk (Typing) - Extension of 1-mo Immediate Need Appointment.

18 - Henry M. Kishinami, Biological Aid (Fisheries) - 700-h Appointment, Part Time.

27 - Brent Miyamoto, Computer Aid - Return to Duty to Complete an Unfinished 700-h Appointment.

La Jolla Laboratory

January 13 - Dimitry Abramenkoff, Biological Technican - Temporary Appointment.

25 - Sondra Pauly, Clerk-Typist - Resignation.

27 - James Thrailkill, Fishery Biologist - Promotion.

April 1980 - Eric Barham, Fishery Biologist (Research) - Retirement.

Equal Employment Opportunity
Committee for 1980

Shown are members of the Equal Employment Opportunity Committee for 1980 at the La Jolla Laboratory. From left they are: Angeles Alvarino de Leira, Hispanic Program Manager, DeLoris Hobbs, Hillary Herring-Dyal, Frank Ralson, Jane McMillan, Al Myrick, Chairperson, and Susan Covey, Secretary.

Tiburon Laboratory

January 2 - Steven J. Pace - Biological Aid - Temporary Appointment.

UNITED STATES
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